

Beyond pretence: new sensibilities for computing and communication technologies in teacher education¹

Leonie Rowan and Chris Bigum
Faculty of Education, Deakin University, Geelong

Abstract

Making particular reference to schools' traditional relationships with CCTS (and the kinds of 'pretend' and 'artificial' learning/assessment tasks that this relationship has historically produced), this paper details a research and teaching agenda focused on exploring the potential of having students work on tasks with value to local and/or school communities. The paper maps the informing theories and current practices of schools participating in the 'knowledge producing schools' (KPS) agenda. Particular attention is given to the ways in which KPS schools are better positioned to respond to the needs of diverse student/community populations, particularly those students traditionally perceived as 'at risk'.

Introduction

Teachers and teacher educators are currently challenged to respond to a maelstrom of agendas. The current, often business inspired, indicator terms such as quality, innovation, change, client engagement, accountability, back-to-basics, conservative creativity, outcomes, boom and bust, market forces, flag an increasingly complex policy climate. In crude terms, these indicators seek to reshape schooling (and, by extension, teacher education) according to one or other business emphases. One problem with drawing on business-related thinking to rework schooling is that schooling tasks differ from business tasks in one crucial way: it is not always required to respond to 'real' world practices and as a result, many 'in school' activities have a 'pretend' rather than 'real world' nature. Despite the invocations of real, relevant or rich, the majority of tasks are artificial, safe replicas of the world beyond.

Clearly there are many reasons why schools tend to operate in these 'safer' spaces. But in a context where the uneven nature of educational outcomes across different student groups is once more under scrutiny, and where technological mastery is routinely identified as vital for contemporary youth continuing to do more of the same vis-à-vis CCTs is difficult to defend. This paper, then, explores a response to the challenge of meeting the needs of contemporary students in changed and changing times that goes beyond pretend tasks. Making particular reference to schools' traditional relationships with CCTs, the paper details research conducted with schools, teachers and teacher educators who are together

¹ Paper accepted for Australian Teacher Education Association 2004 National Conference, Making Spaces, Regenerating the Profession

exploring the value of having students work on tasks that have value to local and/or school communities. The paper will map the theories informing schools participating in the ‘knowledge producing schools’ (KPS) agenda and provide examples of KPS projects. Attention will then be given to the ways in which KPS schools operating with a particular set of mindsets are well positioned to respond to the challenges posed by diverse student/community populations, and to maximising the ‘quality’ of the learning experiences offered to students traditionally perceived as ‘at risk’. We begin with a brief overview of traditional approaches to CCTs in schools and teacher education.

Traditional approaches to CCTS in schools and teacher education

Broadly speaking, teacher education programs and schools have historically been in the business of finding educationally useful things to do with each generation of CCTs (Bigum, 1998). The use of CCTs in teacher education courses dates back to the time when they were first taken into classrooms by enthusiast teachers in the late 1970s. Universities and CAEs responded by offering postgraduate awards in “computer education” which have metamorphosed into a range of courses and options at both undergraduate and postgraduate level today.

However, as computer vendors recognised the significance of the school market, the activities generated by the curiosity of initial cohorts of enthusiast teachers was replaced by other activities motivated by claims that the use of CCTs could improve learning and life chances. Indeed, for a very long time, this mindset has dominated approaches to CCTs in schools and teacher education. CCTs are read as things that improve other things: learning, engagement, completion and so on. A key challenge, in this mindset, is ensuring that teachers are well positioned to get the ‘most’ of out their in-school technologies (there is a powerful efficacy literature reflecting this point but it is beyond the scope of this paper to explore that in detail here). As such, the often cited problems of obtaining educational value from CCTs in classrooms is solved by ‘better’ preparation of teachers coupled with the selection of ‘better’ software. Thus attention was given to identifying ‘new’ technologies and as each wave of improvements to CCTs appeared—colour, graphics, greater processing power (eight, to sixteen, to thirty two bits and beyond), networking, portability, wireless communication etc.)—the educational importance of technologies was re-asserted (one interesting manifestation of this assertion is the emergence of so-called ‘laptop’ initiatives in countries such as Australia and the US (Patterson, 2003)).

Interestingly, the claims made for each set of CCT products were rarely tested: critical analyses of *how* and *when* learning was ‘improved’ have been few and far between. What appears to have been more important was that the next generation of hardware and software were found an educational role. In teacher education programs, we have long seen the mapping of particular theories of learning onto classroom practices using new CCTs and emphasis placed on teaching students how to integrate CCTs into *existing* curriculum. The resultant, well-intentioned, activities are subject to scrutiny not only because they tend to involve students using technology to ‘pretend’ to achieve real tasks (publishing a newspaper by using columns in word processing for example) but because they focus

inwards upon school-ed versions of real world texts and practices and draw attention away from a consideration of the developments *outside* schools (Angrist & Levy, 2002). Some, indeed, don't even make this much use of technologies (Cuban, 2001) However, while many schools have been busy finding educationally comfortable purposes for CCTs, the global economy (and the CCTs underpinning it) continue shape the life chances and opportunities of all students. Shifts that have occurred outside school have exacerbated the patterns of disadvantage (Vinson, 2004) that are evident in many schools and school systems. Nor is there any evidence to suggest that the pace of social change (and its articulation with technological change) is in any sense plateauing. Moore's law (which arose from an observation that the number of transistors able to be packed into a fixed area in an integrated circuit was doubling every year, and now is understood in terms of computer capacity doubling every eighteen months (Webopedia Computer Dictionary, 2004) suggests significant future impacts on the two big problems for robotics: recognition of speech and vision. Even with inefficient work arounds, the increase in processing power in twenty to thirty years time will provide workable solutions. What will this mean? That most of the employment generated by the most recent wave of automation, the low-paid service-type jobs will be wiped out. Conservatively, half of all jobs will be done by robots of various kinds. In twenty years time, the children who are now entering school will be in the early years of their (un)employment.

This creates an urgent situation for schools and teacher education faculties. It is frightening to imagine that while kids are preparing for a real world of unemployment and class division, schools and teacher educators might be still pursuing uses of CCTs in classrooms that conform to the current practice of making up pretend tasks to achieve problematic learning outcomes. Clearly, of course, changes taking place *outside* schools *have* had an impact on a number of school systems in most states. There have been a spate of curriculum initiatives that have been generated by a broad perception that schools may not be ideally aligned to meet the diverse needs of the young in preparing them for a fast changing world. Despite these systemic concerns and the adoption of 'new basics' and 'essential learnings' proclaiming the importance of 'multi-media', communication, futures and relationships the role of CCTs in all of these new initiatives remains true to the current mindset: artificial .

Moving forward

To move beyond the current, dominant way of thinking about and engaging with CCTs in schools and teacher education is not simple. In a related context, we have argued that (Rowan & Bigum, 2003: 187):

Moving beyond limiting performances is not just a matter of starting a new performance (sooner or later any successful performance will be brought back into the dominant explanatory system). Rather it is the constant introduction of new performances, the use of parody, mimicry and other devices to denaturalise old performances, and the ceaseless movement between the new and old performances that together give us the greatest chance of destabilising that which we wish to move beyond.

To work in this way requires a different ways of thinking about CCTs and education. In this respect, Michael Schrage (Schrage, 2000: np) makes the point that “To say that the Internet is about 'information' is a bit like saying that 'cooking' is about oven temperatures; it's technically accurate but fundamentally untrue.” The biggest impact that digital technologies are having and will continue to have, argues Schrage, are on the *relationships* between people and between people and organisations. This idea that CCTs or indeed any technology can be seen in terms of the relationships they affect or mediate, the new relationships they support and the relationships they terminate (Sproull & Kiesler, 1991) is not, in itself, new. What is important here is the emphasis or *mindset* that sees *relationships* rather than information or technology itself as important. This is a significant shift. It means that rather than worrying about finding useful things to do with each new set of CCTs that find their way into schools, the focus becomes one of examining the changes in relationships that develop around the deployment of the new technologies. Such enquiry necessarily engages a much changed and changing world and leads to distinctive forms of education, teacher education, school experience and related research. We turn now to the description of one form of this *relationship* centred enquiry.

Knowledge producing schools

In recent years, a small research agenda informed by this view has been developed at a number of schools in Queensland and Victoria. Dubbed the knowledge producing schools or KPS agenda (<http://www.deakin.edu.au/education/lit/kps/>), it represents attempts by schools to examine new, knowledge producing relationships with their local communities. In doing so, they have moved beyond what we call a “fridge door” mindset for student work. (We use ‘fridge door’ as a shorthand to indicate the normal pattern of knowledge production in schools, that is: student completes an assignment, a teacher assesses it, the assignment is taken home by the student and published on the fridge door for a few days before parents discretely discard it.) For knowledge producing schools projects always end with the production of a product or generation of a performance that exists beyond the teacher/student/family relationship. An important part of negotiating the production of such knowledge is that the product or performance is something that students see as being valued by the consumer or audience of their work. The resultant work is taken seriously and the students know it. These are not teacher driven artificial projects with students pretend to solve problems. They are real projects with actual outcomes: sometimes they are given to students as problems to solve, in other cases they are identified by the students. In both cases the work responds to ‘real world issues’.

For example: when the Principal of one of the schools was invited to talk about developments at the school to a state conference of primary school principals, she commissioned a group of year seven students to document the use of CCTs in the school on video and to produce a CD. The students planned the shoot, collected the footage using a digital camera, did the editing, voice overs, supplied music and credits and burned a CD. The students then presented the product to the conference audience of over two hundred.

Other examples include year six students working with the local cattle sale yards to

produce a documentary of the history of the sale yards for a beef expo in 2003. In another instance, students were commissioned to videotape interviews with local identities as part of a tourism promotion for an old gold mining town. The agency who commissioned the students also commissioned a professional company to do the work. The agency chose the student work which was made available to tourists via touchscreen kiosks in the town.

What is important here is that CCTs are *not* the focus of any of the work. They serve useful roles to support the work of students and the work itself (not the technology underpinning it) has value to an outside group or audience. The role of CCTs in providing students with another means of expression has proven pivotal to the success of many of the projects. Producing knowledge in a primary school would have been much more difficult if students had to rely solely on producing written words. And because technology is subordinate to knowledge production there are, of course, projects that have made no use of CCTs.

The other important element in this work is that community engagement occurs in two ways. Community becomes a source of problems on which to work and a resource for students to tap into in solving other problems. As Moore and Young (2001:459) suggest, there are now strong grounds for ‘reorienting debates about standards and knowledge in the curriculum from attempts to specify learning outcomes and extend testing to the role of specialist communities, networks and codes of practice.’

None of the individual activities or technologies or focus on community are particularly new. What *is* new is that all of these elements are drawn together under a new logic, that of schools as producers (not the consumers, guardians or managers) of knowledge. This logic positions schools as an important new resource for community and provides students with valuable experience in serious knowledge work. In this way schools are engaged in a fundamentally transformative role in the ‘real world’. However, it is not enough for schools to seek to redefine their relationship to knowledge. Instead, they need also to attend to their relationships with the increasingly heterogeneous population that is found within, and around, schooling systems: populations of students, parents, care givers and community members as well as diverse groups of teachers, administrators and policy makers. We turn in this next section to a brief discussion of how KPS sites are challenged to deal with issues of educational disadvantage.

Schools, Technology and Disadvantage

To this point in the paper we have emphasised the value of connecting technologies and schools to ‘real world agendas’ in the production of student-driven knowledge. But there are some extremely important parallel arguments that need to be read in conjunction with this agenda if the KPS framework is to be genuinely valuable. In this section we want to highlight the key social justice perspectives that must underpin any work of the KPS kind.

First: while involving students in work connected to the real world is, as we have argued, a valuable step towards the reinvention of CCTs’ relationships with schooling it is important that schools venturing into this terrain bring with them detailed skills in the

analysis of the environment they will encounter. Not everything that exists in this ‘real world’ is worthy of endorsement, replication or celebration. Indeed, many of the practices and products of ‘real’ world industries, communication systems, media products, bureaucracies or governments are problematic in a number of ways. From sexism to racism, homophobia to xenophobia, dominant cultural products are routinely involved in the production and normalisation of marginalised groups and individuals.

In this context, exhortations for schools to ‘get real’ must *not* be read as attempts to have schools accept without question the practices in/of that world. Nor can knowledge producing schools be involved in the unproblematic, uncritical adoption of practices that may well be legitimated in particular discursive environments within that world. Indeed, the Knowledge Production which is central to the KPS agenda involves producing knowledge about precisely these kinds of issues. So while we would insist on the value of critiquing ‘pretend’ practices with CCTs we would not in any sense wish to do away with the positive potential associated with the *imagination* of new, possible futures. Indeed, the creation of alternative figurations of identity and alternative understandings of culture is in itself a knowledge production project of the highest order.

Second: critiquing the political operations of society must extend to critiques of the ways schools deal with social and cultural diversity. Schools have long been complicit in the production and reproduction of social disadvantage. Endless research studies combine to demonstrate that education continues to be experienced in vastly different ways by various individuals and groups, despite many years of educational reform focused on ‘at risk’ students. The clear implication here is that the practices and traditions of schooling—its curriculum, assessment, pedagogies and social/technical relations—are more likely to reproduce than to contest or subvert patterns of social inequity (Teese & Polesel, 2003).

Knowledge producing schools are in no sense immune to these dangers. Attention to ‘real’ technology does not in any sense translate automatically into attention to ‘real’ disadvantages. Just as there are many different ways of conceptualising the potential/value/role of CCTs in schoolings, so, too, are there many different mindsets associated with disadvantage. Each of these has various strengths and weaknesses but there is insufficient space in this paper to outline the characteristics of the dominant approaches to equity based educational reform—the equal opportunity, valuing difference and socialisation approaches for example: these are discussed in detail elsewhere ((see for example Rowan, Knobel, Bigum, & Lankshear, 2002). Here we want to argue that the possibilities associated with KPS agendas are most likely to be achieved *with diverse students* if coupled with what has been described as a transformative framework for conceptualising equity based reforms (Rowan, 2001).

Following the traditions broadly associated with post-structuralism generally, and post-structural feminism more specifically, transformative approaches to educational reform are characterised by a commitment to a holistic analysis of educational environments (and the contexts within which these are situated) in order to identify the multiple ways in which meanings about student identity (and student success or failure) are constructed. Attention

is drawn to the production of educational (and cultural) norms, and to the complex work associated with trying to denaturalise existing definitions of particular individuals and groups, while simultaneously trying to introduce, validate and celebrate alternative (and multiple) understandings of identity and subjectivity.

To counter the differential power of discourses about gender, or race or class that are negotiated by students on a day-to-day basis, transformative approaches to educational disadvantage emphasise not only skills in the analysis of cultural norms, but also the production and validation of multiple understandings of normality. In this framework, the argument is not that girls can be active OR passive; or that students can be smart OR sporty; or that all kids with parents from China will learn in the same way. Rather emphasis is on identifying and celebrating multiple performances of gender, ethnicity, race, socio-economic status and so on and *tying these performances to educational success*. This, then, is the bottom line: enthusiastic responses to technology, genuine concern for ‘at risk’ students and commitments to engaging with the ‘real world’ will be of little value if the frameworks underpinning these beliefs are insufficiently theorised.

What we are trying to emphasise, then, is the fact that while KPS frameworks appear to have much to offer schools attempting to respond in meaningful ways to changed and changing environments, these schools have as much responsibility as any others to address head on persistently uneven educational outcomes, and to shape their activities in ways designed to improve the educational experiences for *all* learners. This means that in addition to being able to think critically about technology, and knowledge, and schools’ relationships with both, KPS teachers need also to possess sophisticated approaches to thinking about student diversity, and educational reform. Our contention is that combining a non-traditional approach to technology with a transformative approach to disadvantage offers the greatest possibility that student’s will experience an education that is simultaneously ‘relevant’, ‘rich’ and socially responsible.

Implications for teacher education

The initial analysis of KPS work suggests that students in these schools are motivated, engaged, ‘on-task’, and competent in the deployment of a range of operational, cultural and critical literacies. As these are still the early stages of the project, however, detailed conclusions about the ‘value’ of the approach cannot be made. Nevertheless, it is possible to project forward some implications for teacher education of the model itself, and of the on-going need to evaluate this and other ‘not-school’ approaches to technology.

First, to work productively in KPS-like projects, teacher education students need to be provided with critical and analytical skills that allow them to identify traditional relationships between schools and technologies and the extent to which these traditions have met the challenges of the real world. They must also—like students in KPS projects—have the opportunity to experiment with technologies in the pursuit of meaningful educational goals: not merely in the performance of routine tasks.

Second, teacher education students need access to frameworks for assessing the ‘outcomes’

of schooling that go beyond attention to traditional markers of success, and which highlight the ways in which various individuals or groups may be routinely positioned in a problematic relationship with schooling. This necessitates the involvement of teacher education students in research projects to make 'sense' of the outcomes from KPS projects.

Third, teacher educators are challenged to ensure that graduate teachers can analyse critically the likelihood that any educational endeavour will work not simply to ameliorate, or accommodate patterns of disadvantage, but rather to lay foundations that could conceivably result in the deconstruction of practices that produce and reproduce the effects of disadvantage. And finally, it is vital that teacher education programs make use of, and refer consistently to, explanatory and analytical frameworks that exist outside the traditions of education. It is also important that people 'outside' schools are involved in the kinds of educational agendas that are developed in the 21st century. This necessitates an approach to teacher education that involves real and meaningful partnerships between teachers, academics, 'experts' from diverse professional areas, community members and students themselves.

The activities of knowledge producing schools are still in their early stages, and on-going work to assess the 'value' of their activities, and their impact upon student difference is vital. But even in the early stages KPS projects appear able to bring together truly transformative understandings of technology and student difference in a way that promises much for the future of schools and teacher education. This is our greatest hope.

References

- Angrist, J. D., & Levy, V. (2002). New Evidence on Classroom Computers and Pupil Learning. *Economic Journal*(112), 735-765.
- Bigum, C. (1998). Solutions in search of educational problems: speaking for computers in schools. *Educational Policy*, 12(5), 586-601.
- Cuban, L. (2001). *Oversold and underused: computers in classrooms, 1980-2000*. Cambridge, Ma: Harvard University Press.
- Moore, R., & Young, M. (2001). Knowledge and the Curriculum in the Sociology of Education: towards a reconceptualisation. *British Journal of Sociology of Education*, 22(4), 445-461.
- Patterson, D. (2003). Laptop push divides educators, *The Detroit News*. Retrieved 29th May, 2004, from <http://www.detroitnews.com/2003/technology/0308/16/d04-244584.htm>
- Rowan, L. (2001). *Write me in: inclusive texts in the primary classroom*. Sydney: PETA.
- Rowan, L., & Bigum, C. (2003). Actor network theory and the study of online learning. New perspectives on quality. In G. Davies & E. Stacey (Eds.), (pp. 179-188). Boston: Kluwer Academic.
- Rowan, L., Knobel, M., Bigum, C., & Lankshear, C. (2002). *Boys, literacies and schooling. The dangerous territories of gender-based literacy reform*. Buckingham: Open University Press.
- Schrage, M. (2000). *The Relationship Revolution*. Retrieved 26th January, 2000, from <http://www.ml.com/woml/forum/relation.htm>
- Sproull, L., & Kiesler, S. (1991). *Connections: New Ways of Working in the Networked Organization*. Cambridge, Ma.: The MIT Press.
- Teese, R., & Polesel, J. (2003). *Undemocratic Schooling. Equity and Quality in Mass Secondary Education in Australia*. Carlton: Melbourne University Publishing.
- Vinson, T. (2004). *Community Adversity & Resilience: the distribution of social disadvantage in Victoria and New South Wales and the mediating mole of social cohesion*. Richmond, Vic: The Ignatius Centre for Social Policy and Research.
- Webopedia Computer Dictionary. (2004). *Moore's Law*. Retrieved March 15th, 2004, from

http://www.webopedia.com/TERM/M/Moores_Law.html